

Unit 8: Day 4: Go Fish

Grade 8



Math Learning Goals

- Solve problems involving proportions.
- Connect to a everyday sampling problem.

Materials

- paper bags
- linking cubes
- masking tape

Minds On...

Whole Class → Investigation

Students create ratios by moving to different areas within the classroom, based on an attribute chosen by the teacher. Record the appropriate ratios on the board that reflect the class population. Possible ratios: 1) boys: girls: adults; 2) shirt colour – light: dark: medium.

Discuss the ratios and demonstrate when they can be reduced to simplest form.

Action!

Small Groups → Exploration

Each group receives a paper bag filled with 30 linking cubes of one colour. One student removes six cubes, puts a piece of masking tape on each cube, and returns them to the bag. Another group member shakes the bag, takes out five cubes, records how many of these cubes are taped and how many are not, and returns the cubes to the bag. Each group member repeats this process of taking out five cubes, recording, and returning cubes to the bag. Compare results and estimate how many cubes are in the bag.

Lead a discussion on how this experiment can be used to determine the total number of cubes in the bag (equivalent ratio – 6 out of 30 equivalent to 1 out of 5).

Repeat with 20 cubes, 5 of which are taped. Students take out 4 cubes at a time, determine the ratio of taped cubes to those that are not taped, and make predictions using the ratios of taped cubes to total cubes to estimate the number of cubes in the bag.

Reasoning & Proving/Observation/Anecdotal: Observe groups as they work through their exploration and listen to their reasoning.

Consolidate Debrief

Whole Class → Connecting

Groups share their estimates and explain their thinking. Work through the estimation for the problem: Scientists often use the catch, band, and release method to estimate the size of wildlife populations. For example, 250 trout were caught, banded, and released into a small lake in Northern Ontario. One month later, another 250 trout were caught in the lake, 30 of them had bands. From this information scientists could estimate the size of the trout population of the lake. (Approximately 1708 trout were in the lake.)

Students explain why they wait for a month to catch fish.

Home Activity or Further Classroom Consolidation

Assuming that the ratio of eye colour of the class is the same within the wider community, estimate how many people have eye colour that is blue, brown, or other in the whole school, the community, the province, and the country.

Students record any assumptions that they make.

Assessment Opportunities

Use the term *simplest form*, as it will be required in Lesson 6.

All parts of the ratio together represent the whole class.

Students do not know how many cubes are in the bag.

Provide the population for your school and community.

Remind students that all parts of whole ratios represent the total population.

Population: Ontario – approximately 11.5 million; Canada – approximately 33 million (July 2005)

Concept Practice